

Claims

- [c1] A therapeutic shock wave device comprising:
 - a reflector housing;
 - a parabolic reflector disposed in the housing; and
 - an energy source disposed within the parabolic reflector for developing a shock wave so that a planar shock wave is formed by the parabolic reflector and emanates from the housing.
- [c2] The device of claim 1 wherein the parabolic reflector is shaped and dimensioned to provide the planar shock wave having a power density level to produce a tissue reaction in a subject to which the wave is administered.
- [c3] The device of claim 1 wherein the shock wave has a power density in the range of approximately 0.01 mJ/mm² to 1.0 mJ/mm².
- [c4] The device of claim 1, and further comprising a coupling member which intersects the reflector along a circle having a diameter in the range of approximately 20mm to 100mm.
- [c5] The device of claim 1 wherein the parabolic reflector has an origin point and a focal point spaced from the origin

point a distance in the range of approximately 3mm to 10mm.

- [c6] The device of claim 1 wherein the energy source is an electrohydraulic source.
- [c7] The device of claim 1 wherein the energy source has a propagation point centered approximately at a focal point of the parabolic reflector.
- [c8] The device of claim 1 wherein the energy source comprises a pair of electrode tips connected to a capacitor.
- [c9] The device of claim 8 wherein the energy source has a propagation point centered approximately between the electrode tips.
- [c10] The device of claim 1 wherein the parabolic reflector includes a cavity having an opening and the opening sealed by a membrane.
- [c11] The device of claim 9 wherein the cavity contains a fluid.
- [c12] The device of claim 10 wherein the fluid is water.
- [c13] A method for developing a planar shock wave to be used for therapeutic purposes on a subject, the method comprising the steps of:
 - generating a spark to cause a shock wave;

shaping and directing the shock wave to create a planar shock wave; and propagating the planar shock wave toward the subject.

- [c14] The method of claim 13 further comprising the steps of:
 - providing a device having a parabolic reflector, an energy source attached to an electrode tip and a membrane disposed across a cavity in communication with the parabolic reflector;
 - orienting the electrode tip generally at a focal point of the parabolic reflector;
 - generating the spark at the electrode tip and developing the shock wave;
 - propagating the shock wave so that it reflects at the parabolic reflector; and
 - propagating the planar shock wave through the membrane and toward tissue of the subject to receive the planar wave for therapeutic effect.
- [c15] The method of claim 13 wherein the planar shock wave generates an immune response in the subject and has a power density in the range of approximately 0.01 mJ/mm² to 1.0 mJ/mm².
- [c16] The method of claim 14 wherein the parabolic reflector has an opening having a diameter that is in the range of

approximately 20mm to 100mm.

- [c17] The method of claim 14 wherein the planar shock wave triggers a physiological repair response in the subject.
- [c18] A therapeutic method for treating tissue comprising the steps of:
 - generating a planar shock wave; and
 - coupling the planar shock wave to the tissue to be treated.
- [c19] The method of claim 18 further comprising the steps of:
 - providing a treatment device that develops the planar shock wave;
 - orienting the treatment device adjacent to the tissue area; and
 - activating the tissue in order to cause a chemical release from the tissue cells.
- [c20] The method of claim 18 wherein the shock wave is generated by electro hydraulic, electromagnetic or piezo-electric means.
- [c21] The method of claim 18 wherein the generating includes:
 - generating a spark to develop a shockwave, and
 - reflecting the shockwave from a parabolic reflector to form a planar shock wave.

- [c22] The method of claim 18 wherein the planar shock wave is administered at a power density sufficient to cause the tissue to be activated to release a protein for generating an immune response.
- [c23] A therapeutic device for administering a shock wave to a subject comprising:
 - a housing;
 - a shock wave source disposed in the housing;
 - wave directing and shaping structure in the housing responsive to the shock wave for causing a planar shock wave to be emitted from the housing; and
 - structure for coupling the shock wave to the subject.
- [c24] The therapeutic device of claim 23 wherein the wave directing and shaping structure includes a parabolic reflector.
- [c25] The therapeutic device of claim 23 wherein the housing includes an opening and the coupling structure includes a membrane disposed across the opening.
- [c26] The therapeutic device of claim 25 wherein the wave directing and shaping structure is disposed in a cavity having the opening.
- [c27] The therapeutic device of claim 23 wherein the shock wave source includes an electrode that develops a spark.

